AVICULTURAL MAGAZINE

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Ceylon Blue Magpie.

AVICULTURAL MAGAZINE

THE JOURNAL OF THE AVICULTURAL SOCIETY
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THE CEYLON BLUE MAGPIE

Cissa ornata (Wagler)

By G. M. HENRY (Church Enstone, Oxon, England)

This bird is confined to Ceylon, its relatives of the same genus being found no nearer than the Himalayas and Indo-Malayan countries ; it is therefore an interesting example of discontinuous distribution. In the pear-shaped island of Ceylon a great mountain massif, rising to 8,000 feet, occupies the centre of the southern half. Owing to the action of the monsoon winds, the southern and western aspects of these mountains and their foothills receive a heavy and well-distributed rainfall (80 to 250 inches annually), and it is this wet zone which constitutes the habitat of the Blue Magpie ; it is found from a few hundred feet up to nearly the highest point in the Island. Unfortunately, during the last century, the demands of tea and rubber cultivation have depleted the once-extensive forests of this region, restricting the bird's range very severely.

A forest-loving bird, it usually dwells in small flocks of less than a dozen except in the breeding season, when pairs or solitary birds are frequently met with. It moves about a good deal, a flock seldom being found for many consecutive days in the same area. They keep in touch with each other by a great variety of loud calls, most of which have a harsh or rasping quality. Some of these are described in my notes as follows : " a ringing, metallic *crink, crink-rink* suggestive of jingling a gigantic bunch of keys " ; " *crak crak rak rak rak*—a loud, rasping sound " ; " a sharp, harsh *qui qui* " ; " *crikrak* " ; " *twiwi-craa —a* as in hat ". Besides these calls, low conversational notes—squeaks, croaks, chatterings, and sucking noises—are uttered by members of a feeding flock, and a solitary individual will express its feelings in a quaint subsong into which it introduces excellent imitations of the notes of other birds—the scream of the Serpent Eagle, rattle of the Scimitar Babbler, etc.—all in subdued tones.

The Blue Magpie feeds on both fruit and animal food, but much prefers the latter. It partakes of the fruit of *Freycinetia*, a small screw-

pine which clothes the tree-trunks in its haunts. Small vertebrates, such as lizards and tree-frogs, are eagerly sought, and many insects, of which beetles, tree-crickets, and caterpillars appear to be the favourites. Hairy caterpillars are methodically rubbed on mossy branches—presumably to divest them of stinging hairs—before being swallowed. In hunting it is very active and agile, searching foliage most thoroughly, and often adopting attitudes worthy of a tit in the process. All levels of the forest, from ground to tree-canopy, come within its purview.

The flight is rather weak and laboured ; the beautiful, graduated tail is carried closed and strap-like, except in vol-planing when it is widely spread. In flying any distance, the bird tends to drop from its perch to within a few feet of the ground, rising again at the end of its flight.

Moulting takes place in August and September. The breeding season is in the early part of the year. The nest—which has seldom been found—is built in a well-concealed site among foliage near the top of a tree in jungle. It is built of twigs in the shape of a crow's nest, with a deep cavity lined with soft roots or " old man's beard " lichen ; the latter abundantly festoons the trees of the mountain forests. The three to five eggs are described as pale greenish-blue or whitish, heavily mottled with grey and brown.

So far as I am aware, the only Ceylon Blue Magpie that has been kept in captivity was one given to me in September, 1943, by Mr. Ralph West with whom I was staying. His tea-estate in the mountains, 4–5,000 feet, was in the best area for *Cissa ornata* known to me. It was partly surrounded by virgin forest, and a stream—rapid and bouldery —traversing the estate was bordered on both sides by a strip of jungle. This belt of trees was a favourite resort of a flock of Blue Magpies and offered exceptionally favourable opportunities for watching them. Coolies working in the neighbouring tea-field found one amongst the tea bushes and managed to capture it by throwing a " cumbly " (coarse woollen blanket carried by every estate labourer) over it. In the process the bird lost its tail completely ; it was in heavy moult about the head, thin, and generally in poor condition, but seemed uninjured and worth taking some trouble over. A tea-plucker's basket was soon fitted with a perch and sacking cover, and in it " Cissy " spent the next few days until she could be taken to Colombo where more spacious quarters were available. Her feeding presented some difficulties, and much time had to be devoted to hunting frogs and lizards, beetles and grasshoppers—for her appetite proved to be quite unimpaired by her adventures. Once installed in a large cage in Colombo she throve, tamed quickly, grew a new tail, and became a delightful pet. She lived in captivity for three years, the last one in the Colombo Zoo at Dehiwela. The greater part of her domesticated life was spent at Jaffna in the north of the Island, in a climate very different from her natural

abode—hot, dry except for two or three months of the year, and at sea-level ; in spite of this she maintained, in general, excellent health. A holiday upcountry, however—contrary to expectations—gave her little pleasure ; she lost condition, and on returning to Jaffna, fell ill and got so low that her life was despaired of. Brandy and milk, administered at frequent intervals in tiny sips, eventually restored her to health. Normally her diet consisted of bread and milk, scraps of raw meat, lizards, grasshoppers, and fruit such as bananas and pawpaw. On one occasion, when she was sharing a large aviary with a peacock and a pair of Great Stone Plovers, her predatory nature revealed itself ; a Spotted Dove was unthinkingly introduced into the company and Cissy lost no time in pouncing on it ; only the promptest of action saving its life. Although, in the absence of companions of her own kind, she refrained from uttering the noisy calls above-mentioned, she indulged in the subsong during her afternoon siesta, including in it a beautiful imitation of the *chok chaw-choyik* of a distant Jungle-Cock, which she must have learnt in her native forests in her youth. She was fond of bathing, and always became lively and talkative in rainy weather which seemed to have a tonic effect.

Although known as " Cissy ", and hereinbefore treated as of the sex appropriate to that name, no proof exists that " she " was indeed a hen ; the sexes are practically indistinguishable in this bird.

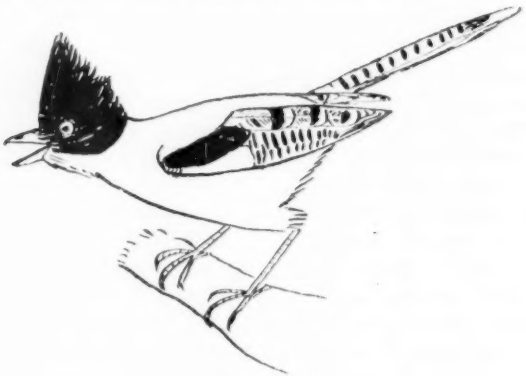
Regarding the " expectation of life " of the Ceylon Blue Magpie as a species, I am pessimistic. As already mentioned, the beautiful indigenous forests of the mountains and wet zone foothills are steadily being whittled away on one pretext or another, and are now but a pitiful fragment of their former extent. Protective laws exist for certain rare and beautiful birds, *Cissa* among them, but will and power to enforce them are absent, no real public opinion on such matters exists, and protective laws will be useless if the bird's essential habitat be destroyed. Reafforestation in the hills consists mostly of the replacement of primeval forest with plantations of exotic trees—eucalypts, acacias, and conifers—which offer no harbourage to any of the more interesting of Ceylon's endemic species. It is true that " Wild-life Sanctuaries " and " Strict Natural Reserves " exist—and look very well on paper—but they are neither sufficiently extensive nor sacrosanct to ensure the survival of a relict fauna. Unless the remains of the natural hill forests are rigorously preserved, both from official exploitation and the insidious process of illicit sapling-cutting and firewood stealing, I have personally no doubt that a very few generations hence will see this beautiful bird—and several other species which inhabit the same area—added to the sorry list of birds lost to our posterity by man's greed, lack of foresight, and thoughtlessness.

* * *

LANCEOLATED JAYS BREEDING IN CAPTIVITY

By Derek Goodwin (Virginia Water, Surrey, England)

These notes are, in part, a continuation of my previous article (Goodwin, 1953) to which readers are referred for descriptions of the appearance, behaviour, and display of the species. The Spring of 1953 found me with only four Lanceolated Jays, the males Green and Yellow (birds are named according to colour of their rings), and the females Blue and White. The female Red got out in February and soon vanished, probably having been killed by some predator. Of the four remaining, the male Green is, and was, the tamest ; he is very steady, has little fear of strange people, and will freely perform all his innate behaviour patterns within a few feet of me. At one time he was subordinate to Yellow, but since he gained dominance over him in June, 1952, he has retained it. Yellow is less tame and rather more jumpy and nervous. The female White is the shyest of all, but even she will behave quite normally within a couple of yards of me if I am still or moving quietly. Blue, in contrast to the others, who are all splendid specimens of their kind, is rather small and dingy in colour. She has what seems to be the garruline equivalent of that captious self-assertiveness that is apt to be correlated with sub-average stature in another species of vertebrate. She is quite as tame as Green, in the sense that she will come as near to me, but is very prone to take alarm, or offence, and to start scolding.



♀ Scolding.

She invariably does this if I look into any bush or tree in the aviary, and even to glance towards a possible nesting site or to search the ground vegetation for Partridges' nests will often elicit her harsh screams of disapproval. The others usually ignore this hysterical behaviour, although if she is particularly excited her cries and gestures

will sometimes evoke a similar, but less intense, response in them. I can only assume that she does this because such behaviour on my part " suggests " a nest- or roost-seeking predator to her, although if so it is rather strange that it should extend even to ground vegetation in which the species would be most unlikely ever to breed or sleep.

All four birds spent the winter of 1952–53 in an outdoor aviary about 30 feet by 20 feet by 8 feet high. The only shelter consisted of roofing felt, covering certain parts of the roof under which were strategically arranged perches, but although freely availing themselves of these by day the Jays all preferred to roost among the foliage of two Cupressus trees. In early March it became apparent that Blue, instead of pairing with Yellow, had set her cap at the " married " male Green. He showed no Macheathian embarrassment at the presence of two rivals for his favours, and when in courtship-feeding mood bestowed his gifts on whichever hen happened to be nearest. As soon as I realized the state of affairs I moved Yellow and Blue to a slightly smaller aviary some way—but not far enough—away. Green and White displayed and indulged in courtship-feeding throughout the Spring, but showed no serious nesting behaviour. This I think was White's fault, as her mate began a nest, which never got beyond the foundation stage, and I feel sure he would have built properly had the female shown interest.

Yellow also started a nest which was never completed. So far as I could see he and Blue were never really paired. At odd times one of them would make sexual advances towards the other, sometimes very fervently, but they never seemed to reach any sort of mutual " rapport ". I think this was probably due to Blue's matrimonial ambitions still being centred on Green, whom she could, unfortunately, both see and hear.

When they started to moult the four were reunited in the large aviary, where they remained until early April, 1954. Once again the two hens had both bestowed their favours on Green. Blue was the dominant female, and had begun to make occasional attacks on her rival. This she was most prone to do, not when White was being paid attentions by the male, but immediately after she herself had been fed by him. In view of White's record, I decided to leave Blue with the favoured male, thinking that, poorish specimen though she was by comparison, she could hardly prove *worse* than White had done so far as reproduction was concerned.

On 18th April I moved Yellow and White to an aviary only a few feet away. This was done in the expectation that if the birds were fairly close the display of any one would be seen by, and perhaps help to give reproductive stimulation to, those in the adjoining aviary. As will be seen, these expectations were fulfilled, though not in the manner hoped for. Blue and Green left together continued to indulge

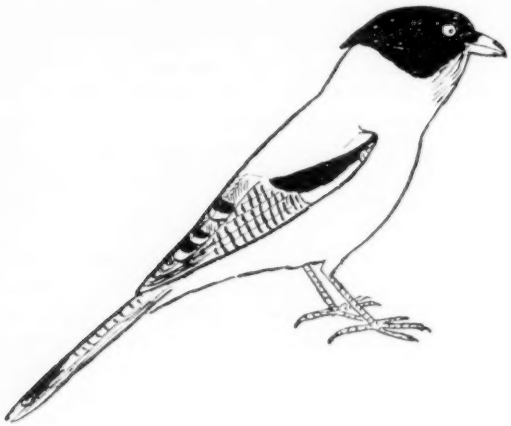
in much courtship-feeding. Prior to this Green had carried odd twigs and fibres to various possible nest-sites and in one—a smallish wire-netting " nest-bowl " fixed high up (but lopsided) under the roof—had constructed a slight and very rough nest-foundation. Both birds, however, spent much time flying restlessly to and fro, due I feared rather to a desire to get out and seek a more congenial nesting place than to any innate urge to exercise their wings. On the 23rd I noticed to my great joy that a lot more sticks had been added to the nest. Progress on it evidently continued on the 24th, and on the 25th (a Sunday when I was at home) the birds spent most of the morning selecting fibrous roots and taking them to line the nest. To my surprise they both did this freely in my presence. Blue—who was then quite prepared to tolerate me in the aviary so long as I did not look at any " forbidden areas "—coming eagerly near to my feet to sort over the roots I threw down, in great contrast to the shyness which White had shown when nesting two years before.

Some more work was done on the nest that afternoon, but no further building was observed, and I think the nest was finished on the 25th. On the 26th and 27th Blue spent much time sitting on the nest, and Green frequently fed her there. On 29th April, Blue went on the nest at dawn, and sat for most of the day, coming off for a long period in the afternoon and several shorter spells. I thought she must have laid but when I felt in the nest at 9 a.m. on the 30th, it was empty. The horrible idea occurred to me that she might be laying an egg each morning, and then eating or hiding it. After some indecision, I decided to try to remove the next egg so as to save at least one of the clutch if my fears were justified. Next morning I flushed Blue at 8 a.m. (she sat very tight and once off mobbed me more vehemently than she ever had before) and took a fresh-laid egg from the nest. This I placed under my old hen Common Jay, who was then incubating her own eggs, replacing Blue's egg with a Common Jay's. Needless to say, all this created a great deal of " alarm and despondency " so far as Blue was concerned, but she returned to her nest and proved my suspicions of her false by having two intact eggs in her nest the following morning. It is interesting that she had had a sort of " dress rehearsal " for the laying of her eggs from at least two days before the first was in fact laid. It will be recalled, however, by those who read my previous article that the female White behaved in this way on the day prior to that on which she laid, as Common Jays also sometimes do.

Blue sat very tightly, coming off the nest to bathe, preen, and exercise just before dusk and also, usually for shorter spells, at other times during the day. Green fed her attentively both on and off the nest. Their behaviour was similar to that previously described (Goodwin, 1953) for Green and White, except that Blue, both before and during

incubation often received or solicited food with appeal calls, or the chirruping notes, and when she used the juvenile begging note she did so much less intensely. Green now showed the same animosity towards wild Jackdaws that my Common Jays always do when they have eggs or young, attacking them furiously through the wire whenever they alighted on the aviary. He spent much of his spare time " in communication " with the exiled White, reinforcing her conviction that she was his and his alone, to my great annoyance. But of this more anon.

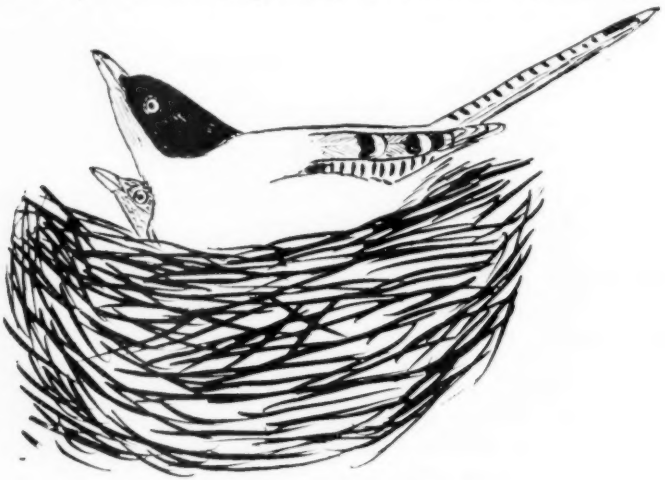
To my sorrow the egg put under the Common Jay proved infertile as, presumably, were two of the three under Blue. On the evening of 10th May there were still three eggs in the nest, but at 7 a.m. on the 19th, one young one had just hatched. It was naked and hideous and so far as I could see in a very hurried look, it seemed slightly deeper pink in colour than a newly-hatched Common Jay. But this may have been imagination, since I did not risk a close inspection. With Blue's hysterical curses ringing in my ears, I beat a hasty retreat, fearing that I might already have done enough to cause disaster. If, as seems likely, the only fertile egg was the last of the clutch, then the incubation period is 16 days, about the same as in our native species. In this connection it might be mentioned that although the Lanceolated Jay is much smaller than the Common Jay, its egg is only slightly so. Indeed, only by closely comparing size plus the slight (individual) colour differences when the eggs were lying side by side on my hand, could I be sure " which was which " of the eggs in the mixed clutch I had manufactured. Blue sat very tight for several days after the young bird hatched. I only risked occasional quick glances, with the aid of a mirror, at the young bird when she was off the nest. This invariably aroused her to a frenzy of mobbing. Finally, on 1st June, she screwed her courage up to the point of actual physical attack, swooping from behind and striking the back of my head. This she repeated on most subsequent occasions when I entered the aviary. To my surprise Green showed no overt resentment of my presence. Particularly amusing was the way in which he would calmly continue gathering, preparing, and engorging food for the young one without the slightest sign of anxiety, whilst his mate was " yelling her head off ". As is the case with the Common Jay (Goodwin, 1951) the male bird at first prepared all largish or hard-bodied insects (such as mealworms) by carefully pulling them to pieces and discarding the harder parts before engorging them, when he was feeding the young one, although he had taken no such trouble when merely feeding the hen on the nest. He took ant pupæ and mealworms readily, also cockchafers and some lean meat when the young one was a few days old (they were not offered before), but refused to take greenfly, small beetles, or centipedes. When given leafy branches,



♂ WITH FOOD FOR YOUNG IN GULLET.

he would at once fly to them and search eagerly for caterpillars. Since caterpillars were few but greenfly many, I had thought and hoped the latter might prove acceptable, but no matter how thick they were on the branches, he ignored them. On reflection it occurred to me that the only birds I have ever seen eating these insects—which, unlike most others, could be procured in any number without search or trouble—are the House Sparrow and the phylloscopine warblers.

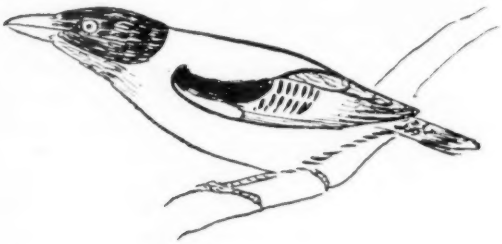
For safety's sake I indulged only in occasional and hurried looks



♀ BROODING YOUNG ONE 18 DAYS OLD.

at the young one. On 3rd June it was about half-feathered and lay in the nest, crouched immobile and gaping in fear in response to its mother's alarm cries. By this time my visits to the nest had resulted in Blue usually beginning to screech at me and to attack as soon as I entered the aviary. On 8th June the young one was fully feathered and was perched on the edge of the nest. For about a week previously Blue had spent much time off the nest, although still brooding the big youngster for about 50 per cent of the time and roosting on the nest at night. I think the young one first left the immediate vicinity of the nest on the morning of 11th June, when it was 23 days old. At 7 a.m. that morning it was hopping and scrambling about among some branches at the opposite end of the aviary. Green, like some anxious but rather incompetent human father in charge of a toddler, fussed nervously around it, oblivious of me, but Blue's only concern was the danger I represented and she mobbed me vehemently and unceasingly. Her behaviour was very similar to that recorded of the Beechey Jay (*Cyanolyca beecheyi*) when breeding in captivity (Sutcliffe, 1926). On the 12th the young bird was seen to be able to fly (with the usual rather fluttering and awkward flight of fledgeling passerines) from branch to branch without losing height. It returned to the nest edge to roost that night, and has done so since. This no doubt is due to its being a high and sheltered perch rather than to any innate tendency to use the nest for roosting after having once left it. At the moment of writing (15th June, 1954) the young bird is still spending most of its time in cover, although it can and does fly quite competently about the aviary. I think both parents are feeding it, although, owing no doubt to Blue's mistrust of me, I have only seen the male doing so. Unfortunately it is more influenced by its mother's warnings than by its father's indifference where I am concerned. It freezes as soon as Blue starts to screech, and when I approach it closely it hops and flutters away through the branches, using every time it pauses the same jerking " flight-intention " movements that an adult Jay does when mobbing. I am hoping that its present conviction that " mother knows best " will be ousted by experience to the contrary, as usually happens with juvenile *Homo sapiens*. Its hunger call is harsher, but at the same time higher-pitched than that of a young Common Jay, and as it is fed subsides into a similar eager gabble which is, I suppose, caused by the bird trying to call out and swallow at the same time.

The young one is a pale and rather dull edition of its parents, with shorter crest and the black and white markings on the secondaries less distinct. In one respect it differs from the specimens of juvenile *G. lanceolatus* in the British Museum. These all have the blue parts of the wings and tail of a pale bluish-grey, but in my bird they are of a similar azure blue as the adult. The skins in question are,



YOUNG BIRD (24 DAYS OLD) FREEZING ON PERCH.

YOUNG (25 DAYS OLD) ALARMED AND ABOUT TO FLEE.

however, all of older juveniles, and it is possible that the blue on my bird will fade to greyish later. On the other hand the food may affect the colouring. In the Common Jay unsuitable food may result in abnormal colouring of the juvenile plumage which is, however, in such cases always *duller* than the normal. Brightness of the blue parts seems to be a certain sign that food is suitable and feathering will be normal. My juvenile Lanceolated Jay shows every sign of being fit, and I take the brightness of its blue parts as a hopeful rather than a warning sign. Its bill and legs are a pale pinkish or fleshy grey instead of the grey of the adult. Its eyes appear a similar colour (dark brown), but I have not examined them at very close quarters. The skin of the eye-rims is paler and more conspicuous than in the adult, in which it is hardly visible.

Since the young one left the nest the pair have indulged in a good deal of courtship-feeding—although this never entirely dropped out—and Green displays a lot to his mate. He has shown signs of wishing to copulate, and has made frequent sudden attacks on Blue, which I think are caused by anger at his sexual impulses being thwarted.

Yellow and White in the other aviary have wasted the entire season. This was due primarily to White's faithfulness to Green. Despite barriers of wire netting and the constant sight and sound of her loved one bestowing his affections elsewhere, she remained

"True as the dial to the sun,
Although it be not shined upon"

to her first love and ignored or evaded Yellow's early tentative advances. Whenever she heard Green offering to feed Blue she would fly to the nearest point of her aviary, cling to the wire, and call imploringly to him. Often at the same time Yellow, prepared food in his gullet, would be flying back and forth vainly giving the food-offering call. Had White ever "asked" him to feed her, I have little doubt he would have responded gladly, but she never did. Green, as has been hinted, was largely responsible for this state of affairs. Although when Blue was with him he had time for no one else, whilst she was on the nest he did not scruple to seek feminine company elsewhere. In fact he spent the greater part of his ample spare time on the perch nearest to White's aviary, his notes and actions leaving neither her nor I in any doubt about his feelings towards her. The birds have now (17th June) begun to moult, so it is too late to hope for any last minute change of heart between White and Yellow.

This breeding season has certainly been a case of "third time lucky", although as Green and Blue have proved such exemplary parents, it is the more annoying that three of their four eggs should have been sterile. This was undoubtedly Blue's fault, as I repeatedly saw her sidle or fly away when Green wished to copulate. Presumably her physical reproductive processes were a little ahead of the psychological ones that should have kept time with them. The two presumably infertile eggs remained in the nest for at least five days, but had gone on the ninth day. Evidently this bird, like the Common Jay, does not remove intact eggs until the young are well grown. Probably in both cases the eggs are removed only subsequent to the young breaking them.

Food Given to the Young

Since my feeding methods seem to have been successful, I give them for what they are worth. This could no doubt be improved upon by anyone with more cash or leisure. For the first two days after hatching I fed the male bird with fresh ant larvæ and pupæ (*Formica rufa*) or mealworms or caterpillars, but mostly ant pupæ, every hour or so. Thereafter I had to be away from home most of the day, and the regime was as follows :—

5 a.m. Fresh ant pupæ (about a dessertspoonful) given to male.
5.30 a.m. Leafy branches, with caterpillars on them, strewn on

floor of aviary (the male always searched these eagerly, but owing to the poor crop of caterpillars locally, I think he seldom got more than four or five at most).

7 a.m. Dish filled with mealworms to last day.
7 p.m. Ant pupæ to male.
8 p.m. Ditto.

After the first three days cockchafers were sometimes substituted for ant pupæ at the early morning feed. Three or four times during the period that the young bird was in the nest I gave the male shreds of lean beef which he fed to it. He probably caught some insects for himself in the aviary, and at least once he caught a mouse. The non-insect foods on the adult Jays' menu—wholemeal bread, peanuts, sop, etc.—were also given to some extent, but they were not, I think, used for the young one, except perhaps as a stop-gap, at least up to the time of its leaving the nest.

NOTE.—The diagrammatic sketches are merely intended to give a general impression of the birds, and have no pretensions to accuracy of detail. Nor are they quite to scale.

PS.—Those with experience of the ill fortune that so often dogs the aviculturist will not be surprised to learn that the above story has an *un*happy ending. On 21st June, the young bird seeming now past all likely mishap, I ventured to go away on a short holiday. When I returned on 1st July, I learned to my horror that the kind neighbour who looked after the Jays in my absence had found it dead that very morning. It had been fit and well the evening before, and when found had severe wounds on its head which had cracked the skull. Presumably an Owl or some other predator must somehow have managed to seize it through the wire. The only slight consolation is that it did not die of any illness that I might have forestalled had I been at home, and since the bird was in every way fit and active previously, there is no reason to think the regime was at fault.

As the old Norse saying has it :

> One's enemies one can overcome,
> God one can bribe,
> But against bad luck no man can do anything.

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BREEDING OF GLOSSY BLACK COCKATOOS

By Sir Edward Hallstrom (Willoughby, N.S.W., Australia)

The Glossy Black Cockatoo is the only Black Cockatoo that has proved really too difficult for the ordinary aviculturist or the amateur to raise from the baby stage after being taken from the nest. The feeding is so highly specialized that they gradually lose weight when given ordinary food. I had some failures until I commenced experimenting with matured birds to see if I could produce substitute food. It was no use putting food before them, they would starve themselves to death unless, of course, they were given food they were used to—the seed of the Casuarina tree. This is not easy, as for many years, particularly around Sydney, the wood of this particular tree (which burns with a great heat) has been used for bakers' ovens. Its use is now being replaced with newer methods of baking bread, but the inroads on the trees were so considerable that it was hard to locate the seed anywhere near to Sydney.

The seed is contained in a hard cone, and it is very difficult to extract it from the cone. Even when the seed has been extracted the birds will politely refuse to eat it—they must tear the cone to pieces themselves. This is tremendously important, as their mandibles have been especially designed by nature for dealing with the cones. If the birds do take to softer foods, such as sunflower seed, maize, etc., their top bill begins to extend, the bottom grows out in two long horns, and is very soon of no use to the bird whatever. It will be understood, therefore, that this was a real problem. As previously stated, in my experimental work I used matured birds, giving them just sufficient of the cones to keep their bills in trim, and fed them on a mixture of canary seed flour, plus peanut butter, and peanut oil. This was administered directly into the crop by means of a syringe and a rubber tube that was pushed down the throat. This could be accomplished with the greatest of ease provided, of course, one knew how to handle the bird.

My aim was to induce the creature to eat sunflower seed, or canary seed. Canary seed was useless, as it did not have sufficient oil, but the oily content of the sunflower seed made it more suitable. I calculated that if sunflower seed, plus some Casuarina nuts daily to keep their mandibles in trim, were used, it might be possible to keep these birds in captivity. The experiments were carried out over six years. Eventually a satisfactory method was found, and the birds now do well on the before-mentioned diet. Unfortunately, they cannot be tempted to eat any other type of food.

In my aviaries there are nine of these birds, and to feed them it is necessary for a man to drive, every day, into the country to gather

fresh nuts. Two separate aviaries were set up with a nice pair in each and suitable hollow logs were provided. One pair were noticed mating, but the other pair, although friendly, did not appear interested. Suddenly the latter pair produced one egg. Several days later another. The female sat closely, and in twenty-nine days hatched one chick. It was then noticed that the male was losing condition, and I am convinced that he had been starving himself in the feeding of the female who rarely emerged from the log. This really was a desperate position. After very careful observations, I decided to remove the male, and found he had really lost a lot of condition. It was necessary to recommence feeding him by injecting canary seed flour plus peanut oil directly into the crop. In a few days he was showing good progress, and was returned intermittently to the mother and youngster. It again appeared as though the double feeding was too much for him and although, at this stage, he had an ample supply of Casuarina cones, I found it necessary to remove him again.

At the moment of writing (1st June, 1954), the baby is over two weeks old and is being well cared for by the mother. The father, who is still separated from the female and the youngster, is now doing well again. A peep into the nest hollow this morning revealed a fluffy cream-coloured youngster about the size of one's closed fist. I am sure that this is the first time ever that one has been hatched in captivity. They are really a lovely bird, and I think it will be remembered in my talk in Sweden I described them as a Cockatoo which does not have a gizzard, similar to the other Black Cockatoos.

As feeding is so highly specialized and consists of a great amount of oil, it makes it most difficult to solve the problem of keeping them in captivity, let alone the successful nesting and producing of a youngster. From all appearances, the youngster is doing so well I am sure it will be successfully reared.

Additional note, 25th June.—The young Glossy Black Cockatoo is doing exceptionally well. It is in faultless condition (the mother having done all the feeding) and is now almost fully feathered and shows itself at the entrance to the nest. I did not return the male to his mate for fear of disturbing the progress the mother had made with the rearing of this singularly glorious youngster.

Further additional note, 20th August.—The Glossy Black Cockatoo has now left the nest, and is accompanying its mother to the food containers, and I should say has been successfully reared by the mother alone. The youngster has a considerable amount of down protruding through the now matured feathers on the head. The down is quite long and gives the bird an attractive appearance.

* * *

LONGEVITY IN PSITTACINE BIRDS

By W. C. Osman Hill (London, England)

In 1951 (Avicultural Magazine, 57, p. 37), I recorded an example of longevity in a Blue-fronted Amazon (*Amazona aestiva*). This individual, a male, had an authentic life of at least 50 years. Since then two other instances of aged Blue-fronts have come to my notice, and in one of them the history is as well evidenced as one ever hopes to get. Both far exceed my previous record. I give the protocols herewith :—

1. No. BP 269, male, received from owner 7th April, 1954 ; weight 292 gm. Last owner had kept the bird for 14 years and had published a note in *The Star* (1944) giving its age at that date as 87 years. Stated to have been in possession of immediate past owner for 42 years and in the same family before that for 37 years. Total 97 years. Post-mortem revealed the usual senile degenerative features.

2. No. BP 275, female, received from owner 21st July, 1954 ; weight 450 gm. Last owner had known the bird personally for 25 years, but it had been in his possession for only 9½ years. It had previously been in the possession of his wife's aunt, who had kept it for 19 years. This lady had received it originally from an old lady of 80, to whom it had been given as a present when she was 10 years old. Total age of bird, if the history is reliable—98½ years.

The owner had subjected the bird to euthanasia on account of its progressive weakness and loss of appetite. Post-mortem revealed the usual cardio-vascular degenerations, together with an abscess in the basal lobe of the right lung.

It is interesting to note the close correspondence in the total period of captivity in these two birds. This possibly represents, within a year or so, the potential longevity for this species. If this is the case, then Flower's (1925) statement to the effect that " a parrot, under favourable circumstances, may live to 20 years, though certain individuals have been known to live for over 50 years " needs revision.

Flower's oldest psittacine bird with reliable documentation was a Greater Sulphur-crested Cockatoo (*Kakatoe galerita*) of 51 years, but Aspinall (1933) recorded a well authenticated example of the same species as being accidentally killed after 109 years in captivity. A traditional record of 137 years 10 months for the same species is given by Hamerton (1943).

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WOODPECKERS IN CAPTIVITY

By J. CARPENTIER
(Curator of Birds, Antwerp Zoo, Belgium)

Among the birds which generally cause a lot of trouble as far as the food is concerned, the Woodpeckers can certainly be mentioned first. Many aviculturists have indeed tried to keep these birds in good condition in captivity but, apart from a few exceptions, with very poor results. Although some fanciers have managed to keep one or more of these birds for some time, it cannot be said that they did so with entire success.

Now chance has brought us a way of feeding these birds, which up to the present has given us complete satisfaction, and therefore we wish to communicate this to our fellow-aviculturists, trusting that it will be of some use to them in taking care of their feathered pets.

Early last year, we were informed that a sailor had brought from abroad a very beautiful, finely coloured bird, of which he knew neither the name nor the country of origin. It lived mainly on fruit (oranges and bananas), and some insects.

We hastened to have a look at the bird, and found that we had to do with a *Melanerpes flavifrons* (Vieillot), i.e. a Golden-fronted Woodpecker from Southern Brazil and Paraguay.

It was a rather lively bird, which did not seem to have suffered very much from the long voyage. We soon struck a bargain, and we were able to add this new species to our collection. The bird having come into our possession quite unexpectedly, we had not been able to prepare a suitable cage. So we were forced to house it provisionally in the cage of a couple of *Nectarinia famosa* (Lin.), in which we had quickly erected a fragment of a tree trunk, so that the bird could perch at ease.

After the arrival of the new guest, both it and the Sunbirds fluttered anxiously around the cage for a short while, but they very quickly settled down, and were visibly satisfied that each of them could go its own way without caring too much about its companions.

After having observed the Woodpecker for a couple of hours, during which time it swallowed some fifteen mealworms and pecked greedily at the orange, we left the birds to themselves, fully convinced that things were going as smoothly as could be expected. Next day everything was going on just as perfectly, but in the afternoon the keeper informed us that our Woodpecker was drinking the liquid food of the Sunbirds, i.e. the food of the Nectaridae. We were of course surprised, but the news pleased us enormously, because we hoped that this would be a way to give our new acquisition more varied food. We placed a few more drinking troughs in the cage, and awaited further developments with interest. After one week we were quite

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GOLDEN-FRONTED WOODPECKER TAKING LIQUID FOOD PROVIDED FOR NECTARIDÆ.

[*To face p.* 166

[Mrs. Brookshank

Cuban Amazons.

Copyright

[To face p. 167

sure that the liquid food, intended for our Nectaridae, had also become the main food of the *M. flavifrons*. The bird is always quite ready to swallow some ten mealworms, but it completely disregards all fruit since it has tasted the Nectaridae food.

We have also tried this liquid food with a Hoopoe, and found that this species accepts it quite willingly as well, but does not consider it as its main food. Since we have given it our liquid mixture, the health of the bird has, however, considerably improved.

The birds are still in excellent health, and we should be glad to learn from other aviculturists whether they have already had some experience with liquid food.

Our liquid food for Nectaridae consists of:—Water, 1 litre; glucose, 75 grams; liquid honey, 120 grams; condensed milk, 75 grams; Mellin's food, 40 grams, and, every day, a knife-point of meat extract, every week a bit of charcoal mixed with the rest.

* * *

CUBAN AMAZON PARROT

(*Amazona leucocephala*)

By Edward Boosey (Keston, Kent, England)

The Cuban or White-fronted Amazon, although, before the parrot ban, the most frequently imported of the small group of Amazons having white or pink on the face and throat, and a rather dark green body colour is, nevertheless, a rare species in captivity.

It is a very handsome bird of a rich darkish green, yellowish on the tail-coverts. The forehead is white, while the cheeks, and a large but somewhat irregular patch on the throat, are of a beautiful deep coral pink. The feathers of the forepart of the body are bordered with black, the width of the borders increasing in the region of the head and neck and upper part of the breast. Behind the pink cheeks is an area of very dark slate grey. There is some wine colour on the abdomen and the tail is yellowish-green, the outer feathers having a large red patch near the base. The outer webs of the flights are rich Prussian blue. The bill is whitish and the legs oatmeal colour. Total length twelve inches or a little over. The bird has the appearance of being slightly smaller and slimmer than a Blue-front.

I do not find them particularly easy to sex, but I should say that hens have a slightly smaller and more irregular area of pink on the throat, but a rather larger and more extensive area of vinous on the abdomen.

During the brief period of the lifting of the parrot ban, we received six of these Amazons at the Keston Foreign Bird Farm. Two of them died—one from a fit, and the other through an accident—but the remaining four have done extremely well.

As I believe they have the reputation of being somewhat delicate, their aviary shelter was heated during their first winter. Since then, however, they have wintered successfully without heat, though it should perhaps be added that their aviary is in a very sheltered position, facing due south. Only during the winter months, however, are they shut into the shelter each night.

They are delightful aviary birds, being strong fliers, and altogether very lively and active. They are also very vocal, uttering both morning and evening a wonderful medley of typically Amazonian cries. These, however, while very attractive when heard from a distance out of doors, might prove rather deafening indoors, and this is one reason why I think these Amazons more suited to aviary than cage life.

If they have a disadvantage, it is that they are so terribly shy and wild.

For weeks they became completely panic-stricken if one went anywhere near their aviary, but now at last they have calmed down a bit, and one bold spirit—a male I think—will actually take a slice of apple from my fingers, watched apprehensively in the background by what I take to be his wife, who obviously considers it a most risky proceeding ! The other two think it more prudent to retreat at once into the shelter, until all danger is past.

Cuban Amazons have a curious display which consists of the male thrusting forward and slightly lowering his wings, thus bringing into prominence the wonderful blue in the flights and, at the same time, making a sort of mock-serious token lunge at the female.

Their seed mixture should consist mainly of sunflower, with a few monkey nuts, and a little canary, groats, and hemp. Twice a week we give ours a few cubes of stale bread, previously soaked in sweetened, slightly watered milk. As to fruit and green food, Cubans are very fond of apple, and also of spinach beet, particularly the fleshy stalks of the Seacale variety.

They have the reputation of possessing but little aptitude for learning to talk.

As far as I know Cuban Amazons have never been bred in captivity, but there is a Continental record of the breeding of a hybrid between this species and a Blue-fronted Amazon.

The accompanying photograph of two of our Cubans at Keston was taken by my partner Mr. Brooksbank only with the greatest difficulty. At first, alarmed by the appearance of a camera in their aviary, none of them would stay still for a second. Eventually, however, after considerable patience on the part of the photographer, two of them remained still just long enough for this photograph to be taken.

* * *

THE COURTSHIP BEHAVIOUR OF THE CUTTHROAT FINCH

(*Amadina fasciata*)

By DESMOND MORRIS (Department of Zoology, University Museum, Oxford, England)

INTRODUCTION

In the past birds have been classified largely on the basis of their structures and colours, but recently there has been a growing tendency to analyse the relationships between bird species by also making particular use of the specific behaviour patterns exhibited by them. The best conditions for behaviour studies of this sort are undoubtedly those in which large numbers of closely related species are kept in captivity in cages or, preferably, aviaries. For, as Konrad Lorenz (1954) has pointed out, when one is making a detailed inventory of all the specific behaviour actions of a number of species of birds, one has to live with them day after day over a long period of time. Lorenz has even gone so far as to say that " it is really impossible to gain the necessary knowledge by observing animals in the wild state ". Many field ornithologists will disagree with this, but I feel that it depends on the type of study one is making. If, as Lorenz was doing with his ducks, you are studying a large number of closely related species, then the possibility of slight distortions of behaviour resulting from the conditions of captivity will only be a small disadvantage, for the time and labour involved in travelling all over the world to observe the many species in the group under investigation, would make such a study exceedingly difficult. If, on the other hand, you are making a detailed study of one species, then it is probably better to study it in its natural habitat, as Niko Tinbergen (1953) has done with the Herring Gull.

The earlier investigators, who were interested in classifying bird species, were able to carry out most of their work in museums, with hundreds of skins of birds arrayed on their desks. But they overlooked the fact that to classify living things on the basis of dead objects involves a serious omission !—namely, of course, BEHAVIOUR. Nowadays, as the result of the work of such pioneers as Heinroth, Whitman, and Lorenz, specific behaviour characters are treated with the same respect as structural characters, from this point of view. But although behaviour characters are thought of with respect to-day, there are, even so, too few actual investigations of this type made. This is probably because it is more difficult to observe, measure, and record a behaviour pattern than, say, a colour pattern. For this reason, a combined investigation has been planned, and already begun, to analyse the relationships of a group of birds using information obtained

from recording their structures, behaviour, genetics, and geographical and ecological distributions. When all this information is pieced together, the result, it is hoped, will give as clear a picture of their evolution as is possible.

Because the study of the behaviour of a large number of closely related bird species necessitates the use of a large number of aviaries, the choice of species for such a study is narrowed down immediately to very small birds—for spacial economy—and to species that are easily available. This leads inevitably to the Mannikins and Grassfinches, which breed readily in captivity and which have simple food requirements. The work that has been done so far has been concentrated on a few species, and now that this initial reconnaissance has proved successful, a much wider range of species is being obtained and investigated.

The Cutthroat Finch

One of the first species studied in the present investigation was the Cutthroat Finch. This species has been bred in captivity as long ago as the eighteenth century, and is particularly hardy. It occurs in East, West, and Central Africa, and is replaced in South Africa by a very closely related species, the Red-headed Finch (*Amadina erythrocephala*). Although these two species are at present classified with the Mannikin tribe (Amadinæ), they are rather different from the typical Mannikins. The male is very distinctly different from the female, whereas in all the typical Mannikins, the sexes are alike. Also the mottling of the light brown plumage is rather unlike that of other Mannikin species. A third difference is that the nestlings of the Cutthroat Finch do not exhibit the characteristic horseshoe-shaped marking inside the mouth. All Mannikins, in which nestling mouth-markings are known, possess the typical horseshoe-shape, but the Cutthroat nestling shows large blotches inside its mouth instead. These and other facts make the Cutthroat a particularly interesting species to study ; for, since it does not fit any too easily into its present taxonomic position, any new data concerning it may help to improve the way in which it is classified. In the present paper, however, I will confine myself more to a discussion of the displays which this species uses in its courtship behaviour, because until we know more about the behaviour of many of the Mannikin species, it will be impossible to make any statements about the possible evolution of the group. This stage has yet to be reached. In the meantime, it is very profitable to look at the courtship displays for their own sake.

The Song-and-Dance of the Male

The male Cutthroat differs from the female in appearance by having, not only the famous " cut-throat ", but also a dark brown

patch over the belly region. However, owing to the startling sex-difference provided by the red throat-patch, the brown belly-patch is seldom referred to. It is nevertheless important, in the display of the male to the female, immediately before copulation.

The male birds, when in full sexual condition, sing almost incessantly. During most of their singing, they pay no attention to the females, and do not orient themselves towards them. Throughout this singing, the heads of the males are swung smartly and distinctly from side to side.

In this species, as in several related ones, it has become quite clear that this song does not have the same function, nor, apparently, the same causation, as in many other kinds of birds. Typical song has the effect of intimidating rivals—warning them off a territory, or disputing a boundary—and of attracting females. It is primarily aggressive. In the Cutthroat, the song appears to have not the slightest threatening effect on other males, but, if anything, rather attracts them to the singer. Also variations in aggressiveness and singing seem to bear no relation to one another. This may be due to the distortion of life in captivity, or it may be due to the fact that all this group of birds have become semi-social and may nest together in close proximity under circumstances that would make ordinary song and territorial behaviour a hindrance.

Although song may be given by Cutthroats when several birds are sitting together in one part of an aviary, it is more likely to occur when a male is left alone, for example, when all the other birds are down on the ground feeding. In the case of the Java Sparrow (*Padda oryzivora*), which is also a member of the Amadinæ, I only ever heard a male sing when it was left alone by its mate. The Java Sparrow song was very infrequent, however, and it appears that as the frequency of singing increases, so the males may sing even when their mates are sitting next to them on a branch, although even under these circumstances it is still possible to detect that the song is more likely to occur when no other bird is close at hand.

In the case of the Cutthroat and its relatives, the song is also included as an almost non-stop accompaniment of the courtship dance of the male. This courtship singing differs from the type described above mainly in that the male now orients himself towards the female and specially directs the singing *at* her, instead of into space. As he sings, so he advances along the branch towards her. If she is unresponsive and does not intend to be mated with, she hops or flies away at this point. If she is moderately responsive, she remains still on the branch as the male advances, her feathers sleeked, ready for a quick take-off if necessary. If she is very responsive, she reacts to the song and dance of the male with an invitation display. If she gives this, it acts as a signal to the male that she is ready to copulate

with him. He responds by mounting her, their cloacae are brought into contact, and insemination takes place. The male then dismounts and usually both birds shake and preen themselves.

But what is the precise nature of the movements made by the displaying male as he dances to the female, and what exactly is the significance of the invitation display of the female? All too often, such displays are described simply as "comical antics". They are, however, much more than this to the birds concerned, being specific signals which indicate the mood of the individual performing them. Just as man-made signals, such as traffic-lights, must be quite precise and rigid, so that their meaning cannot be misconstrued, so it is found that animal signals are also quite fixed and rigid in form. In the evolution of a species, a particular display movement becomes uniquely associated with a special mood of the performer. Just as the green light of a traffic indicator means exclusively GO to the motorist, so the invitation display of the female means MOUNT to the male. Just as the green light signifies that the cross-roads are clear for the motorist to continue, so the invitation display of the female bird signifies that she is ready to be mounted and will not flee. The question remains as to why one type of display, rather than another, should be performed by any one species in any one instance. Before answering this it is necessary to describe the display of the Cutthroat in some detail.

The Inverted Curtsey

As the male advances towards the female, he assumes an upright posture, which is much more vertical than his normal stationary pose. Also, his feathers are raised in a special way. Most of his feathers are somewhat raised, but his ventral feathers are not all raised to the same degree. Careful observation shows that the feathers in the ventral region are differentially raised in such a way as to exaggerate and enlarge the brown belly-patch to a maximum. This has the effect, viewing the bird frontally (as does the female Cutthroat), of displaying the brown patch efficiently during the advance. It is so swollen that the lower belly feathers reach down beyond the branch on which the male is standing. Seen sideways, the bird appears to have grossly over-eaten, there being a large brown swelling in the belly region! As the male advances in this posture down the branch towards the female, it gives a rapid series of dance movements every few hops it takes. It advances a little way, then, pausing, stretches and bends its legs very rapidly a number of times in quick succession. The body is held at the same, rather vertical, angle as it is raised and lowered, and the general effect has been likened, by certain authors, to the human curtsey. But a correction is necessary here, for the first element of a human curtsey is a *downward* one. The legs

start stretched and then bend and then straighten again. But the reverse is the case with the Cutthroat. It begins with its legs bent, straightens them, and then bends them again. Then, without pausing, it repeats this action a number of times in rapid succession. Then it stops dancing and hops nearer to the female, only to repeat the whole performance over again. Each little dance is therefore *a series of inverted curtseys*. But why should the dance take this particular form? By studying many such displays and movements, the general conclusion that has been arrived at is this. Animals often perform low intensity versions of activities which do not lead to the completed act, but which one can nevertheless recognize as being its first stage. For example, when a man gets up from an armchair he leans forward and places his hands on the arms of the chair and then rises. If one watches the whole action take place a number of times, it soon becomes clear, even if one only sees the man lean forward in the characteristic manner, that he intends to get up. Thus the first sign that he is going to get up is not actually seeing him rise, but seeing the *intention movements* of rising. Footballers and boxers, for example, make great use of the fact that human beings react very keenly to intention movements. For instance, a footballer pretends to kick the ball to the left and then, while his opponent is reacting to that intention movement, he kicks it to the right. Reactions to intention movements are very common in birds, and, in evolution, it appears that certain intention movements and the appropriate responses to them have become "fixed" as special inborn signals. Not only that, but they have also become modified—usually exaggerated in some way—and now have the quality of rituals. During this process of ritualization, the original intention movement, from which a signal has been formalized, is often obscured by the now wildly exaggerated version in which it is seen. But in the case of the Cutthroat, and in a number of other cases, ritualization has not gone so far as completely to mask the derivation of the display. For, if the dancing male Cutthroat is observed closely, it will be seen that the upward movement of each inverted curtsey is sharper, quicker, and more forceful than the downward movement. This can only mean one thing, namely that each series of inverted curtseys is a series of intention movements of jumping up, and as the male is facing the female, and, further, as the courtship ends with the male jumping on to the back of the female, the jumping up in this case must mean mounting. Therefore I interpret the dance of the male Cutthroat as a series of intention movements of mounting the female.

But why, in the first place, should the male have been making only intention movements to mount? There are two possible answers here. The first is that the sexual tendencies of the male may have been thwarted by the female refusing to give any indication of readiness

to be mounted. In his sexually aroused, but thwarted, condition, the male may then have kept on starting off the mounting action, but never quite completing it, until finally the female gave the invitation signal. It is easy to see how this situation could have evolved into the present one. Alternatively, there is considerable evidence that the male is afraid of approaching close to the female when he is courting her. His upright posture and his hesitant advance, for example, lead one to think of his mood as being basically a conflict between a sexual tendency to mount the female and at the same time a tendency to flee from her. The reason for the intention movements could, therefore, be that the male has to overcome his inclination to flee from the female.

This second explanation applies more clearly in a related species, the Zebra Finch, which I have studied in rather more detail. In this species, the male also performs a song and dance as he approaches the female, but, unlike the Cutthroat, he does not give the inverted curtsey dance, but a lateral pivoting dance instead. He swings his body from left to right as he advances, and as he does so, swings his tail round even farther than his body, so that it is displayed to the female. The male Zebra Finch also holds himself in an upright posture and shows signs of being hesitant in his advance towards the female. Each of the lateral swings of his body can be thought of as intention movements of turning away from the female to flee from her. The male turns away to the left as if to flee and then, his sexual tendency getting the upper hand, he swings back towards the female again. But this brings him closer to the female, and his tendency to flee increases again and he turns away to the right, and so on.

Specific differences, such as the one described above, between the dance-types of the male Cutthroat and the male Zebra Finch are very helpful indeed in determining the relationships between species. Work is going on at present to ascertain the dance-types of as many species of Mannikin and Grassfinch as possible. It must be stressed that a difference or similarity in such a behaviour character as dance-type is just as reliable for classifying the species concerned, as is the colour or marking of their plumage. In fact the two types of character are often related, as I hope to show below.

The Invitation Display

Returning for a moment to the display of the female Cutthroat ; when the male has danced to her for some time, she may give the invitation display which consists of placing herself in a horizontal posture, couching low over the perch. She then proceeds to quiver her tail in a series of immensely rapid vibrations. They are so rapid that, until they have been filmed in slow motion, it will be impossible to analyse them fully. The main path of the vibrations, however,

appears to be a vertical one, but it is by no means as simple as that. I said earlier that sometimes movements become ritualized to such an extent that they are difficult, if not impossible, to relate to their origins. This female display is just such a case. It is, in fact, the most completely ritualized movement I have ever observed, and I can only guess at its origin. Tentatively, it can be suggested that this is a very rapid series of ritualized intention movements of fleeing, presumably prevented from developing into actual fleeing by the conflicting sexual tendency to remain near the male. In support of this, the female is in the horizontal posture typical of the take-off before leaving a branch. Also, flicking of the tail is often seen as part of the usual take-off intention movement.

Again, here is a problem which will probably best be solved by a wide comparative study of a number of related species, for there is quite a chance that some species will not have ritualized the action to such a degree and that its origin will then become clearer. Lorenz found this in many cases with his ducks. Unfortunately, all species of Mannikin and Grassfinch, in which I have observed the female invitation display so far, appear to be equally ritualized. (But there are many more species to be observed yet !)

The Display Markings

Finally, something must be said about the nature of the bright colours and vivid markings which are used in display.

It is dangerous for animals to be too conspicuous because it renders them too vulnerable to predation. Many animals are completely cryptic and show no bright colours or markings at all, but a number arrive at a compromise. They can be cryptic or conspicuous as the occasion demands. The one way of doing this is to possess a transformation display of some sort, such as the inflation of pouches, air-sacs, and the like, or to change colour during the breeding season, risking the danger of attracting predators only during that time of the year, in order to be conspicuous in display. The other way of compromising is to be cryptic over that area which the predator normally sees, and conspicuous over that area which the mate, or rival, normally sees. This latter method is the one adopted by all the Grassfinches and Mannikins. They are all cryptic from above, so that when a flying predator looks down at them from above, say, feeding on the ground, he cannot see them too clearly. All the Grassfinches and Mannikins, as far as I know, without exception possess back and wing plumage colour which merges with their natural environments. Their ventral surfaces, however, are a different question altogether. Here one finds bars, spots, bands, and patches of colour and intense contrast. These are displayed to the female by the courting males, and it is remarkable to note how frequently

the particular patch of colour or contrast, possessed by a particular species, is displayed so well by the special dance movements and posturings of that species. I will use the Cutthroat and the Zebra Finch as two excellent examples of this. The former has a *frontal* brown patch on its belly, and a *frontal* red patch on its throat. Its display is performed *facing* the female, and the male fluffs out its brown patch to the full, and then proceeds to shake it up and down at the female. In the case of the Zebra Finch, the male keeps on turning its sides to the female, and thus displays its white-spotted, chestnut-coloured, flank feathers, which, although normally carried inconspicuously inside its wings, are now fluffed outside them for the occasion. Also, the male displays its chestnut ear-patches, one after the other, as it pivots in front of the female. The twisting of its tail, through an angle which makes it clearer for the female to see, also displays a special marking, for the tail of the Zebra Finch is banded, with intense contrast, in black and white.

A study of many such correlations, between bright markings and display movements, has revealed that it is a general rule with animals ; and further, that it seems likely that the movement has preceded the colour in evolution. This is borne out by the fact that many species of a group often show a particular movement, but not all have developed a bright marking which can be displayed by it. It seems that when a particular organ, such as the tail, is moved about in display, any mutations which occur which make the tail of that species more conspicuous, will be strongly favoured, since they will draw, even more, the attention of the opposite sex to the displaying individual. It is unnecessary to mention in detail the bizarre extremes to which some species have taken this principle (Birds of Paradise, Pheasants, etc.). Most species do not go too far because, as stated above, predators as well as mates are likely to be attracted !

Conclusion

I have attempted to give some idea of the type of bird behaviour analysis that can and is being carried out using some of the commonest of aviary birds. This work is expanding rapidly at the moment and, as a result, it is hoped that when a greater number of species has been studied, both the interrelationships between the various species, and the organization of their reproductive behaviour systems, will be more clearly understood.

From the point of view of the classification of the group, the production of hybrids is of the utmost importance, in order to obtain some idea of their genetical make-up. Many Mannikin and/or Grassfinch hybrids are reported in the literature, but photographs of them are rare, and descriptions are often too brief to be of much use. It is hoped that, in the next few years, it will be possible to produce a large

variety of hybrids, with the aid of artificially increased day-lengths and, if necessary, injections of sex hormones. However, this will undoubtedly be a slow process, and it is also hoped to obtain valuable information from some of the many private breeders of these birds, who may already possess just those hybrids in which we are most interested.

References

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* * *

FOREIGN DOVES IN A DORSET GARDEN

By Dorothy A. Jakobsson (Ferndown, Dorset, England)

The sadly neglected dove family contains many a bird of great beauty and loveliness. From the humble Barbary, with its laughing call, gentle coo, and sober Quaker-like dress, to the more exotically clad Green-wing with ruby bill and sparkling, vividly green plumage. The dainty little Harlequin's moth-like flight has a charm which must be seen to be believed—misty grey above and gleaming cinnamon beneath, and in the cock, the orange and red bill foiled by its black mask. The blue-grey, brown-flecked English Turtle-Dove's almost purring note harmonizing so wonderfully with the sharp pheasant-like call of the Vinaceous Turtle-Dove and the treble coos of the dainty little rosy pink Senegal and the Necklace Doves. The latter with its deep checkered collar and crimson ringed eye. How can anyone say that the dove's song is monotonous? Why, no two birds—even of the same species—coo exactly alike.

Last year, two of the fawn Barbarys gave me a little white nestling as a fellow to a fawn one. Also I believe I have an albino Barbary. The difference between them is that the first bird has the space-collar and yellow eye-ring of the " Java ", while the second has no suspicion of a collar and a cream eye-ring with eyes that flash red in the sun's light. Also I was lucky enough to breed two Barbary × English Turtle hybrids.

Though perhaps few doves are brilliantly coloured (those which are, are outstandingly so), all have a soft harmony of colour that would be the envy of any dress designer and quite vies description with their soft merging and mingling.

All the above-mentioned birds live quite happily in eight unheated, grassed aviaries in a shrub planted plum orchard. The whole garden is very well sheltered by pines, rhododendrons, a privet hedge, and a gorse-topped turf bank, which does much to keep at bay keen winds.

There is also a largish goldfish pool, with pink and white water lilies, and tiny artificial stream.

The houses of the aviaries are made of tongued and grooved wood with heavy roofing felt on the roof, and on their north and east sides for extra protection.

The birds are mainly fed upon split maize, paddy rice, and millet, with sugar sprinkled bread and milk for all nesting Doves.

Rock salt somehow seems to increase the bloom on the bird's plumage, and tends to intensify the colour, and we feel it is absolutely necessary for the Green-wings. In their native home, I am told, they frequent the salt-licks and it is believed there they die if they are denied access to them for more than twenty-four hours.

As the doves are gathered from many countries, so are the trees and flowering shrubs which surround them, and do so much to provide a beautiful setting. The Bird Cherry blossoms beside the Indian Catalpa Bean, Canadian and Japanese Maples, are backed by the evergreens of Northern Europe, and the Liquidambers of America glow among the silver birches and oaks of England. Rhododendrons of many colours blossom in their appointed season. The wisteria of distant China clings and rambles among the branches of our native apple trees, one of which has mistletoe " in its hair ".

Goldcrests nest in the cedars, Sparrows in the ivy and tits—of various kinds—in specially set-up nest boxes. Robins and Hedge-Sparrows are housekeeping in the gorse bank. A vent pipe has made a rather odd home for a pair of Starlings. Thrushes have reared a family high up on the rhododendrons. Blackbirds and the Green Woodpeckers, too, have nests somewhere in the garden. Brown squirrels gambol among the Scots pines where the Wood-Pigeons are nesting. A Nightingale, in summer, often sings in the apple tree beside the window, but they have not nested in the garden. We do wish they would !

The other day, when the doves were softly cooing, we were much amused to hear that a little girl visitor—staying in a nearby house—ran indoors calling out, " Auntie, Auntie, the lady over the hedge has a garden that's simply full of Cuckoos ! "

* * *

LONDON ZOO NOTES

By J. J. YEALLAND

An interesting and curiously coloured Plantain-eater, the Uganda Black-faced (*Crinifer personata leopoldi*), was brought back by Mr. Seago during July. It belongs to the sub-genus *Gymnoschizorhis* of which, as pointed out in recent correspondence, there are two forms. The body colour is of soft pale shades of grey and brownish-grey, the neck is white, and there is an incongruous looking patch of green on the breast.

A Varied Thrush (*Hesperocichla nævia*) has been deposited. This and the Plantain-eater are new to the collection.

Presentations include a Martial Hawk Eagle (*Polymætus bellicosus*) ; three Squacco Herons (*Ardeola ralloides*) ; a Common Heron (*Ardea cinerea*) ; a Bank Myna (*Acridotheres ginginianus*), and fourteen Budgerigars, six of them trained " homing " birds from Mrs. Upton's flock.

Two Black-chinned Yuhinas (*Yuhina gularis*) ; five Green Imperial Fruit Pigeons (*Ducula ænea*) ; three Nicobar Pigeons (*Calœnas nicobarica*), and a Narcissus Flycatcher (*Xanthopygia narcissina*) have been deposited.

Purchases consist of a One-wattled Cassowary (*Casuarius unappendiculatus*) ; a King Bird of Paradise (*Cicinnurus regius*) ; a Uganda Brown Parrot (*Poicephalus meyeri*), and twelve new Humming-birds—Ruby-crested, Stripe-breasted Star-throat, Pucheran's Emerald and Blue-chinned Sapphire.

A Lineated Finch (*Sporophila americana*) and an Abyssinian Lovebird (*Agapornis taranta*) have been received in exchange.

The birds so far bred in the Gardens include three Mallard × Red-crested Pochards ; four Red-crested Pochards ; seven Lady Amherst's Pheasants ; six Golden ; two Reeves' ; two Swinhoe's ; one Mongolian and a White-crested Kalij ; also a Ceylon Jungle Fowl ; two Crested Pigeons ; one Barred-shouldered Dove ; one Green-winged Dove ; three Chinese Painted Quail ; a Silver Gull and a Lesser Black-backed × Herring Gull. Last year's young of this " hybrid " were ringed so that we can observe the adult plumage.

Perhaps the most interesting nesting event was that of a pair of the Tawny Frogmouths in the Australian Collection. One egg was laid and it contained a chick which had died when nearly ready to hatch.

The breeding pair of King Penguins' egg was infertile. As is well known, these birds moult just before the breeding season and choice of mates is dependent upon the time that the individual birds moult. The breeding female preferred her old mate, though he did not moult until some time later than she, and it may have been that he was not ready to breed at the time the egg was laid. One of the new females also laid and the husband appeared to be the bird

bred here in 1952—at any rate, he took his turn at incubating the egg, but after a few days it was somehow broken. It could scarcely have been fertile, for observations at Edinburgh show that these Penguins do not breed until the fifth year.

The report that a young Green-winged King Parrakeet hatched at the Parrot House had been destroyed by vermin is incorrect. Mice have been exterminated, and the very few rats in the Gardens do not get into the parrakeet aviaries. The old breeding pair of Green-winged Kings have a fine young one which has just left the nest.

The " homing " Budgerigar aviary is now completed and contains some fifty birds.

* * *

BRITISH AVICULTURISTS' CLUB

The forty-third meeting of the Club was held at the Rembrandt Hotel, Thurloe Place, South Kensington, S.W. 7, on Wednesday, 8th September, 1954, following a dinner at 7 p.m.

Chairman : Miss P. Barclay-Smith.

Members of the Club : Mrs. H. G. Alderson, W. D. Bell, Miss K. Bonner, Captain A. Clarence, G. T. Clark, Mrs. G. T. Clark, A. H. D'Aeth, A. Ezra, Miss S. A. Fothergill, J. C. Garratt, H. J. Harman, Dr. E. Hindle, Miss S. I. Hobday, Major E. F. Housden, Mrs. H. Ingram, Miss E. M. Knobel, Miss M. H. Knobel-Harman, Dr. F. B. Lake, G. S. Mottershead, K. A. Norris, Miss E. G. Perry, A. A. Prestwich, D. M. Reid-Henry, R. C. J. Sawyer, D. Seth-Smith, E. N. T. Vane, H. Waller, C. H. Wastell, C. S. Webb, H. Wilmot, J. J. Yealland, O. H. Young.

Guest of the Club : Field-Marshal the Viscount Alanbrooke.

Guests : Dr. K. Aylwin-Gibson, J. Bailey, D. P. Bell, Mrs. W. D. Bell, Dr. F. Bernis, Senora C. Bernis, S. A. Croucher, Mrs. S. A. Croucher, W. J. C. Frost, Miss H. Gentry, W. E. Higham, H. Ingram, Mrs. F. B. Lake, J. Markham, Mrs. R. Maurice, Mrs. S. Murray, Mrs. J. A. Norris, R. S. Schwartz, Mrs. D. Seth-Smith, Mrs. H. Waller, Mrs. C. H. Wastell, Miss H. Wastell, W. A. Wood, Miss A. H. Young, Mrs. O. H. Young.

Members of the Club, 33 ; guests, 26 ; total, 59.

Walter Higham showed his recently completed coloured film, " Birds of the Scottish Highlands." In this, typical Scottish birds such as the Dotterel, Ptarmigan, Greenshank, Capercaillie, Crested Tit, Red-throated and Black-throated Diver, and Slavonian Grebe, are shown. The Buzzard, Corncrake, Greyhen, Common Gull, Sandpiper, and other birds are dealt with ; and a visit is made to a colony of nesting Black-headed Gulls.

The most important part of the film, however, deals with the Golden Eagle. For many years Walter Higham visited the Highlands in search of eyries suitable for filming. At last, after fourteen years, he succeeded in finding two of very different types. One was built in a tree near the head of a glen, the other amidst rocks, high up on a mountain side. The result of this perseverance is a fine series of photographs of family life.

In thanking Walter Higham for showing his absorbingly interesting film the Chairman said the technical quality was well in keeping with the very high standard associated with this famous photographer. The audience showed by its sustained applause that it was in full agreement with this tribute.

The next meeting of the Club is on **10th November, 1954.**

ARTHUR A. PRESTWICH,
Hon. Secretary.

* * *

NEWS AND VIEWS

Last year Arthur Lamb bred a Blue-fronted Amazon × Yellow-cheeked Parrot hybrid which has flourished. This year the parents have successfully reared two young ones.

* * *

Sidney Porter's Malachite Sunbirds, mentioned in the last number of the Magazine, unfortunately did not succeed in hatching their eggs. One egg contained a young one dead in shell and the other was punctured.

* * *

Post-mortem examination revealed that "Louisa", the Lousiana Pelican that recently died in St. James's Park, should have been named "Louis". Since 1951, of thirteen Pelicans to arrive, eight have died, two are in St. James's Park, and three at the Zoo.

* * *

G. C. Lynch has bred two Purple Finch × Greenfinch hybrids. It is perhaps a little remarkable that there is no record of the Purple Finch being bred in this country. There are hybrid records, and not good ones at that, of Purple Finch × Canary and Scarlet Rosefinch × Purple Finch.

* * *

During the past few months several members have had cause to be grateful to the Society for the Waterfowl Ringing Scheme. The high

winds of recent months have enabled many birds with wings improperly clipped to become airborne. Use of the blue rings has been instrumental in the Police and R.S.P.C.A. returning some of these birds to their owners.

* * *

Green-winged King Parrakeet—one young one has left the nest at the London Zoo. Jendaya Conure—Mrs. A. Morgan has a young one flying. Black-headed Conure—C. M. Payne's three young ones eventually left the nest. Canary-winged Parrakeet—E. N. T. Vane had a nest of four reared. Golden-mantled Rosella—L. G. Middleton, a nest of six reared; Allen Silver, a nest of four, and a second doing well. Quaker Parrakeet—London Zoo, five flying.

* * *

Dr. Roger Tory Peterson (*National Geographic Magazine*, August, 1954) gives a very interesting account of the unassisted arrival and settlement of the Cattle Egret (*Bubulcus ibis*) in America. This Egret is a familiar sight in southern Spain, in Africa, and in the warmer parts of Asia. Some twenty years ago it appeared suddenly in South America. Just how it made the transatlantic flight and when is not known. The birds flourished and within twenty years the flocks have increased and spread, with the result that the species has now been seen in Florida, where as many as 152 have been counted, Virginia, Maryland, and other Atlantic Coast States; also in Newfoundland. This is a bird migration unprecedented in history.

* * *

The AVICULTURAL MAGAZINE has now reached the venerable age of three score years. While rejoicing in this fact, we must not overlook a milestone in the existence of a journal with somewhat similar objects, namely *Foreign Birds*, formerly the News Bulletin of the Foreign Bird Exhibitors' League, now the magazine of the Foreign Bird League. The League was founded in March, 1933, and has thus "come of age". The prime mover in its foundation, Harold King, is still the guiding genius, being both Hon. Secretary and Editor, and it is due mainly to his efforts that it is in such a strong position. It is worthy of record that the President, Chairman, the majority of the principal officers, together with some three hundred members, are also members of the Avicultural Society.

* * *

The Bailiff of Royal Parks reports the hatching of a Pink-footed Goose, on the Long Water, Kensington Gardens, on 18th July, 1954.

Credit for this breeding is due to our member, W. H. Punter. This is a somewhat uncommon event and the records are few. The Pink-footed bred for many years with Major P. Hammond, D.S.O., of Blakeney, Norfolk. Two of the young ones were given to W. H. St. Quintin, and from these young were bred at Scampston Hall, in 1924 and 1925. The Kensington Gardens' birds originally came from Peter Scott in 1947. In answer to our inquiry, Peter Scott said they have not yet succeeded in breeding the Pink-footed at Slimbridge. He also drew attention to the fact that Dr. John Berry has bred them annually for some years : so has a Mr. Williams, in Norfolk.

* * *

The response to the request to members in arrears to bring their subscriptions up to date has been very good, but some members are apparently inclined to procrastinate. Please assist the Hon. Treasurer and the Society generally by keeping up to date.

A. A. P.

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REVIEWS

LA PERRUCHE ONDULÉE ET LES INSÉPARABLES (Budgerigars and Lovebirds). By M. LEGENDRE, with illustrations by L. DELAPCHIER. Editions N. Boubée & Cie. Paris, 1954. Price 500 francs.

In the preface to his book *Oiseaux de Cage*, which was reviewed in the May-June number, 1953, of the AVICULTURAL MAGAZINE, Monsieur Legendre stated that he hoped to deal with the Parrots and Doves, which were not included in that book, in later volumes. The book under review follows the same lines as its forerunner, and the first and larger half is devoted to Budgerigars. The opening chapter is an account of the original Budgerigar in Australia, and this is followed by chapters on the first importations, acclimatization in Europe, colour varieties, aviaries, bird-rooms and cages, feeding, breeding, taming, and illnesses.

The second part of the book, which deals with Lovebirds, opens with a description of the various species, after which there is a chapter containing general information. It is stated that the information given concerning the keeping of Budgerigars also applies very largely to Lovebirds, so the various points are not dealt with so fully as in the first section of the book. Details regarding the special needs of Lovebirds are given, and it is pointed out that some species are more sensitive to cold than Budgerigars, and attention is drawn to their

quarrelsomeness with other birds and even with other pairs of the same species. Full descriptions of nine species are then given, with details of their native haunts, first importations, requirements in captivity, and breeding. The final chapter is on hybrids.

The book is well illustrated with good photographs and two colour plates, one showing four varieties of Budgerigars and the other five species of Lovebirds. In addition, there are a number of line drawings, and diagrams showing the layout of aviaries. The book is dedicated to Monsieur Jean Delacour.

P. B-S.

EIN VOGELFREUND ZWISCHEN ZEITEN UND WELTEN (The experiences of a bird-lover between two ages and in two worlds). By WILHELM KRACHT. Verlag Gottfried Helene, Pfungstadt-Darmstadt. Price 5.90 DM.

As Dr. J. Steinbacher says in his Introduction, this book is the story of the varied life of a man who is both an expert at bird keeping and a great bird-lover.

In the first chapter Wilhelm Kracht describes his early efforts at keeping and rearing birds in a small village in Westfahlen where no one had any knowledge of this art, and relates that the first bird he kept was a Blackbird. He gives a vivid description of the countryside and the life at that time—the last part of the nineteenth century—and concludes the chapter by giving a list of the different species of birds he kept. The author then describes his experiences in Paris where he had a post, and his first visit to the Paris bird market. His journeys then took him to Madrid where he again paints a word picture of the life and country, with particular attention to the birds he kept there. This is followed by an account of the time he spent in Berlin, his friendship with the Heinroths, and the many species of birds he kept in captivity. In 1913 he went to Odessa, where he states he reached the peak of bird keeping ; he remained in Russia for six years and returned to Germany in 1918, where he lived in various towns, always keeping birds or maintaining his interest in some way, and finally settled in Freiburg. Wilhelm Kracht has lived during a period of great change and visited widely differing countries, and he writes vividly of his impressions, the life of the countries he has lived in, the interesting people he has met, and the many different species of birds he has kept, varying from small passerine birds to various species of Eagles. His book contains much interesting information gained from his own practical experiences.

P. B-S.

* * *

NOTES

THE EFFECT OF CLIMATIC CONDITIONS ON BREEDING RESULTS

It has long been the custom to associate inclement weather occurring in Spring and early Summer with low fertility in foreign birds' eggs—probably rightly, but is it as simple as that?

Naturally warmth and sunlight will have a more cheering effect on tropical and sub-tropical birds than will dull cool weather, but what is the extent of the physiological effect?

Bad weather seems a likely cause of a falling off of interest in nesting after early promise that so often happens, but in these cases no eggs are laid. The causes of infertility in birds' eggs must be many: there may be a lower concentration of sperms in cold weather, or, though fertilization might be adequate, activation of the germ does not take place or ceases at an early stage.

Spermatogenesis in domestic poultry is thought to be partly related to the length of daylight and by early April there are more than twelve hours of daylight.

Climatic conditions appear not to have any effect on the nesting of some birds. Black-footed Penguins breed in winter here; Cereopsis Geese usually nest in January; Hooded and Brown's Parrakeets in October, and Indian Ringnecks in March, so in these cases, at least, there seems to be some cyclical influence.

Then there are so often the exceptions. This year, for instance, Mikado Pheasants and Cape Teal have bred exceptionally well at Leckford and Turquoisine Parrakeets, the most delicate of the Grass Parrakeets, have bred well at Keston.

Controlled experiments would be very difficult and expensive, but it would be interesting to see whether another ten degrees of warmth and some artificial sunlight supplied where practicable during the Spring made any appreciable difference.

J. J. YEALLAND.

* * *

CORRESPONDENCE

ARTICLES ON THE COMMONER BIRDS

When I first came in contact with the AVICULTURAL MAGAZINE, I read that it was a magazine for British and Foreign Birds. So far, I have only read of the higher priced foreign birds (with the exception of once, when Mr. Boosey gave an article on Zebra Finches). Would it not be possible to have more notes on the more common birds; we are not all millionaires, and while the more exotic birds make interesting reading for the richer people, they do not interest the common everyday working class. I would like to read more about the British birds and cheaper foreign finches, etc. There is very little in the Magazine to interest me at the present time, and I believe it would be of more interest to a lot of subscribers if articles such as I have just mentioned were more frequent. No offence now please; I'm just writing what I think.

GEO. FLAXMAN.

618 LAYARD ST.,
LONDON, ONT.
CANADA.

I entirely agree with the sentiments expressed in this letter, and am only too anxious to receive articles on the more common birds. It is quite a mistaken idea that because a bird is commonly kept in captivity there is nothing more of interest to write about it. When Mr. Delacour came to write his monumental work on Pheasants, he found a great lack of information regarding the Golden Pheasant, one of the most popular species kept in captivity. And with regard to ornithology in general, it is significant that though there have been monographs written on many of the rarer species, knowledge regarding the House Sparrow is lamentably small.—EDITOR.

MAGPIES AND SQUIRRELS AS MENACES TO AVICULTURE

Although they are pests, I had never thought of either the Magpie or the Grey Squirrel as actual avicultural menaces. Both, it is true, will frighten birds by running about on top of their aviary, but so will an innocent stray homing-pigeon that alights upon it.

I now know, however, that the presence of Magpies and Grey Squirrels gives cause for far greater anxiety.

The late Duke of Bedford's breeding pair of Blue Ringnecks hatched every egg and had four young ones in the nest. In the middle of May, however, when they were at the stage when they are only just starting to feather, but are too big to be brooded, the weather became more and more arctic every day, so, on looking in the nest-box, I was hardly surprised to find that the three youngest had died of cold. The fourth was better-clothed and eventually fledged successfully. It had, however, a habit of clinging on to the wire netting, and a few days later was found dead with a chest wound. The Magpies had been taking a great interest in it, and I have little doubt it was they who killed it by jabbing at it through the wire netting. Had it been murdered by its parents they would almost certainly have scalped it.

A pair of Roseate Cockatoos reared a fine brood of three, and not long after they fledged the feeding door was mysteriously found wide open, the birds, fortunately, being still in the aviary.

The button closing the feeding door was somewhat loose, and through a chink, the sunflower and monkey nuts could be seen from outside. A Grey Squirrel had frequently been seen in the vicinity and inspection of the aviary disclosed a mass of scrabblings of its toe-nails on the woodwork, particularly round the feeding door. I think there is little doubt it had discovered that by turning the loose button, it could get inside and feed, particularly as on the day of the discovery of the open door not a scrap of food of any kind was left in the food vessel.

The door is now secured by a small bolt, and there has been no further trouble.

EDWARD BOOSEY.

BRAMBLETYE,
KESTON, KENT.

Since writing this I have actually seen the squirrel carefully examining the new door fastening so there is no doubt whatever that he was the culprit.

"MASKED WHITE" ZEBRA FINCH

We thought Chestnut-flanked White Zebra Finch a better name for the new variety, as ordinary Whites usually throw a proportion of young that are ticked or marked with grey. These, at any rate in this country, are quite often referred to as marked White Zebra Finches, and this might well cause confusion between them and the new variety.

EDWARD BOOSEY.

BRAMBLETYE,
KESTON, KENT.

* * *

CANDIDATES FOR ELECTION

Mrs. E. COTTER, Fourways, 62 South Street, Southwick, Sussex. Proposed by Mrs. F. E. Matthews.

T. D. HARMON, 3601 W.—102 Street, Inglewood 2, Calif., U.S.A. Proposed by Mrs. Vera Harmon.

W. J. HOWARD, Kilnock, Prestwood, Great Missenden, Bucks. Proposed by E. N. T. Vane.

R. T. KYME, 30 King Street, Kirton, near Boston, Lincs. Proposed by Miss K. Bonner.

Mrs. E. LEWIS, P.O. Box, Topton, Pa., U.S.A. Proposed by Miss K. Bonner.

N. MACLEOD, White Lodge, Strathpeffer, Scotland. Proposed by Terry Jones.

Mrs. A. MORGAN, 38 Inham Road, Chilwell, Notts. Proposed by A. A. Prestwich.

R. E. M. PILCHER, M.A., F.R.C.S., The Meadows, Spilsby Road, Boston, Lincs. Proposed by Major W. H. Payn.

W. G. SALMON, Angley Lake, Cranbrook, Kent. Proposed by S. T. Johnstone.

H. A. STAPLES, 210 Broadway, Chico, Calif., U.S.A. Proposed by A. Robinson.

W. G. TEAGLE, Flat 6, 2 The Paragon, Blackheath, London, S.E. 3. Proposed by A. A. Prestwich.

W. TIMMIS, c/o Mayfield Cottage, Hoole Village, Hoole, Chester. Proposed by G. T. Iles.

Lady IDA TWYFORD, Wychwood Farm, Shermanbury, nr. Horsham, Sussex. Proposed by D. F. Castle.

NEW MEMBERS

The eighteen Candidates for Election in the July–August, 1954, number of the AVICULTURAL MAGAZINE, were duly elected members of the Society.

CHANGES OF ADDRESS

JEAN-PIERRE DERSCHEID, to 35 Avenue Jeanne, Brussels, Belgium.

L. G. MIDDLETON, to The Old Vicarage, Church Town, nr. Garstang, Lancs.

C. R. PODMORE, to 49 Greystones Grange Road, Ecclesall, Sheffield 11.

G. TH. VAN DAM, to Zoo-Centrum, Aalten, Holland.

Dr. H. WILDEBOER, to 244 Saltshouse Road, Sutton-on-Hull, nr. Hull, Yorks.

DIAMOND JUBILEE DONATION

G. T. ILES . . . £60

MEMBERS' ADVERTISEMENTS

The charge for Members' advertisements is ONE PENNY PER WORD. *Payment must accompany the advertisement, which must be sent on or before the 15th of the month to* A. A. PRESTWICH, 61 CHASE ROAD, OAKWOOD, N. 14. *All members of the Society are entitled to use this column, but the Council reserves the right to refuse any advertisements they consider unsuitable.*

WANTED

Female Speckled Pigeon or South African Rock Pigeon.—DEREK GOODWIN, Toft, Monk's Road, Virginia Water, Surrey.

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